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In-field Scattering Studies Using a Cryogen-free Magnet at APS

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Over the past several years a number of high-resolution in-field scattering studies have been performed at the APS using cryogen-free magnets. While these magnets produce relatively modest magnetic fields (4 tesla) compared to larger magnet systems, they have a number of unique advantages such as providing greater angular access to the sample and more flexibility in the scattering geometry. More importantly, however, these magnets are extremely simple and inexpensive to operate, which makes them more conducive to use by novice users. A horizontal-scatting diffractometer, which can accommodate either of two nearly identical cryogen-free superconducting magnets, has been used on both the 4-ID-D and 6-ID beamlines for in-field scattering experiments. One magnet applies a vertical-field perpendicular to the scattering plane while the other applies a horizontal-field in the scattering plane. This poster will present recent results obtained using these magnets and layout plans for upcoming upgrades.